What is claimed is:

1. A sensor for optical displacement measurement in accordance with a confocal imaging principle, comprising:

a first optical output, adapted to emit a first illumination beam;

a second optical output, adapted to emit a second illumination beam;

a beam splitter, positioned so that the first illumination beam after a transmission through the beam splitter and the second illumination beam after a reflection at the beam splitter are merged;

an imaging optic, arranged and designed so that the two merged illumination beams are directed onto a surface of a measurement object, whereby, because of different displacements of the two optical outputs for the imaging optics, a first real image of the first optical output and a second real image of the second optical output are created at different distances from the imaging optic;

a first optical input, located in the same place as the first optical output, so that a first measuring beam, created by a least a partial reflection of the first illumination beam, is created on the surface, the first illumination beam arriving in the first optical input after passing through the imaging optics and after a transmission through the beam splitter;

a second optical input, located in the same place as the second optical output, so that a second measuring beam, created by a least a partial reflection of the second illumination beam, is created on the surface, the second illumination beam arriving in the second optical input after passing through the imaging optics and after a reflection at the beam splitter;

a first light detector, adapted to record an intensity of the first measurement beam;

a second light detector, adapted to record an intensity of the second measurement beam; and

an evaluation unit, coupled to the two light detectors, adapted to determine, from a comparison of the intensity of the first measurement beam and the intensity of the second measurement beam, a distance between the sensor and the surface.

2. A sensor in accordance with claim 1, further comprising:

a plurality of further first optical outputs, positioned offset sideways to the first optical output, each adapted to emit a further first illumination beam which, after a transmission through the beam splitter and after passing through the imaging optics, arrives at the surface;

a plurality of further second optical outputs, equal in number to the plurality of further first optics and positioned offset sideways to the second optical output, each adapted to emit a further second illumination beam which, after a reflection at the beam splitter and after passing through the imaging optics, arrives at the surface;

a plurality of further first optical inputs, equal in number to the plurality of further first optics and each positioned at the same point as a further first optical output, so that in each case a further first measuring beam is created on the surface by at least partial reflection of a further first illumination beam arriving in the further first optical input after passing through the imaging optics and after a transmission through the beam splitter;

a plurality of further second optical inputs, equal in number to the plurality of further first optics and each positioned at the same point as a further second optical output, so that in each case a further second measuring beam is created on the surface by at least partial reflection of a further second illumination beam arriving in the further first optical input after passing through the imaging optics and a after reflection at the beam splitter;

a plurality of further first light detectors, equal in number to the plurality of further first optics, each adapted to record the intensity of a further first measurement beam; and

a plurality of further second light detectors, equal in number to the plurality of further first optics, each adapted to record the intensity of a further second measurement beam, wherein all further light detectors are also coupled to the evaluation unit so that, from a comparison of the intensities of the further measurement beams, the distance between the sensor and a plurality of scanning points on the surface, equal in number to the plurality of further first optics, is adapted to be determined.

3. A sensor in accordance with claim 2, wherein the optical outputs are arranged in a line.

4. A sensor in accordance with claim 2, wherein the optical outputs are arranged in a matrix.

5. A sensor in accordance with claim 1, wherein the optical outputs and the optical inputs are at least approximately point-shaped.

6. A sensor in accordance with claim 1, wherein the optical outputs and the optical inputs are each implemented by way of an end surface of an optical waveguide.

7. A sensor in accordance with claim 1, wherein the optical outputs and the optical inputs are each implemented by way of a diaphragm.

8. A sensor in accordance with claim 1, wherein the light detectors include monochrome light detectors.

9. A sensor in accordance with claim 1, wherein the first light detectors are implemented by way of a first camera and the second light detectors are implemented by way of a second camera.

10. A sensor in accordance with claim 2, wherein

at least a majority of the first optical outputs are optically coupled to a first light source; and

at least a majority of the second optical outputs are optically coupled to a second light source.

11. A sensor in accordance with claim 2, wherein the optical outputs and the optical inputs are at least approximately point-shaped.

12. A sensor in accordance with claim 3, wherein the optical outputs and the optical inputs are at least approximately point-shaped.

13. A sensor in accordance with claim 4, wherein the optical outputs and the optical inputs are at least approximately point-shaped.

14. A sensor in accordance with claim 2, wherein the optical outputs and the optical inputs are each implemented by way of an end surface of an optical waveguide.

15. A sensor in accordance with claim 5, wherein the optical outputs and the optical inputs are each implemented by way of an end surface of an optical waveguide.

16. A sensor in accordance with claim 2, wherein the optical outputs and the optical inputs are each implemented by way of a diaphragm.

17. A sensor in accordance with claim 5, wherein the optical outputs and the optical inputs are each implemented by way of a diaphragm.

18. A sensor in accordance with claim 2, wherein the light detectors include monochrome light detectors.

19. A sensor in accordance with claim 2, wherein the first light detectors are implemented by way of a first camera and the second light detectors are implemented by way of a second camera.

20. A sensor for optical displacement measurement in accordance with a confocal imaging principle, comprising:

first optical output means for emitting a first illumination beam;

second optical output means for emitting a second illumination beam;

means for merging the first illumination beam and the second illumination beam;

optic means for directing the two merged illumination beams onto a surface of a measurement object, and for creating a first real image of the first optical output means and a second real image of the second optical output means at different distances from the optic means;

a first optical input means, located in the same place as the first optical output means, for creating a first measuring beam on the surface, created by a least a partial reflection of the first illumination beam, the first illumination beam arriving in the first optical input means after passing through the optic means and after a transmission through the means for merging;

a second optical input means, located in the same place as the second optical output means, for creating a second measuring beam on the surface, created by a least a partial reflection of the second illumination beam, the second illumination beam arriving in the second optical input after passing through the optic means and after a reflection at the means for merging;

first light detecting means for recording an intensity of the first measurement beam;

a second light detecting means for recording an intensity of the second measurement beam; and

evaluation means for determining, from a comparison of the intensity of the first measurement beam and the intensity of the second measurement beam, a distance between the sensor and the surface.

21. A sensor in accordance with claim 20, further comprising:

a plurality of further first optical output means, positioned offset sideways to the first optical output means, each for emitting a further first illumination beam which, after a transmission through the means for merging and after passing through the optic means, arrives at the surface;

a plurality of further second optical output means, equal in number to the plurality of further first optical output means and positioned offset sideways to the second optical output means, each for emitting a further second illumination beam which, after a

reflection at the means for merging and after passing through the optic means, arrives at the surface;

a plurality of further first optical input means, equal in number to the plurality of further first optical output means and each positioned at the same point as a further first optical output means so that a further first measuring beam, created on the surface by at least partial reflection of a further first illumination beam, arrives in the further first optical input means after passing through the optic means and after a transmission through the means for merging;

a plurality of further second optical input means, equal in number to the plurality of further first optical output means and each positioned at the same point as a further second optical output means, so that a further second measuring beam, created on the surface by at least partial reflection of a further second illumination beam, arrives in the further first optical input means after passing through the optic means and a after reflection at the means for merging;

a plurality of further first light detecting means, equal in number to the plurality of further first optical output means, for recording the intensity of a further first measurement beam; and

a plurality of further second light detecting means, equal in number to the plurality of further first optical output means, each for recording the intensity of a further second measurement beam, wherein all further light detecting means are also coupled to the evaluation means so that, from a comparison of the intensities of the further measurement beams, the distance between the sensor and a plurality of scanning points on the surface, equal in number to the plurality of further first optical output means, is adapted to be determined.

22. A sensor in accordance with claim 21, wherein the optical output means are arranged in a line.

23. A sensor in accordance with claim 21, wherein the optical output means are arranged in a matrix.

24. A sensor in accordance with claim 20, wherein the optical output means and the optical input means are at least approximately point-shaped.

25. A sensor in accordance with claim 20, wherein the optical output means and the optical input means are each implemented by way of an end surface of an optical waveguide.

26. A sensor in accordance with claim 20, wherein the optical output means and the optical input means are each implemented by way of a diaphragm.

27. A sensor in accordance with claim 20, wherein the light detecting means include monochrome light detectors.

28. A sensor in accordance with claim 20, wherein the first light detecting means are implemented by way of a first camera and the second light detecting means are implemented by way of a second camera.

29. A sensor in accordance with claim 21, wherein

at least a majority of the first optical outputs are optically coupled to a first light source; and

at least a majority of the second optical outputs are optically coupled to a second light source.

30. A method of optical displacement measurement using a sensor, in accordance with a confocal imaging principle, comprising:

merging a first illumination beam and a second illumination beam;

directing the two merged illumination beams onto a surface of a measurement object, and creating a first real image and a second real image at different distances;

creating a first measuring beam on the surface, created by a least a partial reflection of the first illumination beam;

creating a second measuring beam on the surface, created by a least a partial reflection of the second illumination beam; and

determining, from a comparison of an intensity of the first measurement beam and an intensity of the second measurement beam, a distance between the sensor and the surface.

31. A sensor for optical displacement measurement in accordance with a confocal imaging principle, comprising:

a beam splitter, positioned so that a first illumination beam after a transmission through the beam splitter and a second illumination beam after a reflection at the beam splitter are merged;

an imaging optic, arranged and designed so that the two merged illumination beams are directed onto a surface of a measurement object, whereby, because of different displacements of the two optical outputs for the imaging optics, a first real image of the first optical output and a second real image of the second optical output are created at different distances from the imaging optic;

a first optical input, located so that a first measuring beam, created by a least a partial reflection of the first illumination beam, is created on the surface, the first illumination beam arriving in the first optical input after passing through the imaging optics and after a transmission through the beam splitter;

a second optical input, located so that a second measuring beam created by a least a partial reflection of the second illumination beam, is created on the surface, the second illumination beam arriving in the second optical input after passing through the imaging optics and after a reflection at the beam splitter; and

an evaluation unit, adapted to compare intensities of the first measurement beam and the second measurement beam, to determine a distance between the sensor and the surface.